



TOMS RIVER REGIONAL SCHOOLS

Science Department

7th Grade

Date created: May 2021

Board Approval: August 2022

Revised: July 2022

Philosophy, Mission and Vision

Philosophy:

Our philosophy includes the following:

1. To provide a safe and encouraging learning environment for all students that is aligned to the NJDOE Standards for Science Education
2. To prepare students for a successful and positive high school experience
3. To create opportunities for discussion about future career choices and goals
4. To promote, encourage and develop students' critical thinking and problem solving skills to enable future success in a technologically advanced world
5. To instill in our students the concept that Science surrounds us everywhere and in everything we see, feel, hear, smell, touch and do.
6. To encourage curiosity about the world we live in, our planet and its solar system, our natural resources and how to protect them and recycle, our varied habitats and the creatures living in each, and, most importantly, how to think "like a scientist" and formulate conclusions based on factual information gathered.

Mission: to provide a strong academic foundation in Science and to challenge students to think critically as they explore essential questions and topics and connect them to their own lives and the real world around them.

Vision: to promote independent thinking and encourage students to become lifelong learners who are curious about the world around them and who can connect their experiences with STEM (Science, Technology, Engineering and Math) and Project-Based Learning to be successful and productive members of a digital and global society.

Course description and/or program overview:

Students will be immersed in various scientific topics, including: Engineering & Design, Forces, Energy Transfer, Earth's Systems, and Changing Earth & Human Activity. Students will be introduced to 21 st century skills including: critical thinking, creativity, collaboration, communication, information literacy, media literacy, technology literacy, leadership, productivity, social skills, and flexibility.

UNITS	PACING GUIDE
Introduction to Engineering and Design	Pacing: 10 days
Forces	Pacing: 45 days
Energy Transfer	Pacing 45 days
Earth's Systems	Pacing: 40 days
Changing Earth & Human Activity	Pacing: 40 days

Overview Forces

Unit Summary: Students are able to apply Newton's Third Law of Motion to relate forces to explain the motion of objects. Students also apply ideas about gravitational, electrical, and magnetic forces to explain a variety of phenomena including beginning ideas about why some materials attract each other while others repel. In particular, students develop the understanding that gravitational interactions are always attractive but that electrical and magnetic forces can be both attractive and negative. Students also develop ideas that objects can exert forces on each other even though the objects are not in contact, through fields. Students apply engineering practices and concepts to solve a problem caused when objects collide. The crosscutting concepts of cause and effect; system and system models; stability and change; and the influence of science, engineering, and technology on society and the natural world serve as organizing concepts for these disciplinary core ideas. In these performance expectations, students are expected to demonstrate proficiency in asking questions, planning and carrying out investigations, and designing solutions, and engaging in argument; and to use these practices to demonstrate understanding of the core ideas.

Enduring Understandings:

Students will understand that...

- Objects can exert forces on each other even though the objects are not in contact
- Gravitational interactions are always attractive but that electrical and magnetic forces can be both attractive and negative
- The same basic rules govern the motion of all bodies, from planets and stars to birds and billiard balls
- There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.
- Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors.
- Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design.
- A solution needs to be tested, and then modified on the basis of the test results, in order to improve it.
- Models of all kinds are important for testing solutions.
- The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution

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Essential Questions:

- How can one describe physical interactions between objects and within systems of objects?
- How is the motion of an object affected by forces that act on it?
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Standards

MS-PS2-1, MS-PS2-2, MS-PS2-3, MS-PS2-4, MS-PS2-5, MS-ETS1-3, MS-ETS1-4
[2020 NJ Science Standards](#)

Interdisciplinary Connections
[Other Cross-Curricular Opportunities](#)
Opportunities for [SEL](#)

21st Century Life and Careers

Technology

- creativity and innovation
- critical thinking and problem solving
- communication
- collaboration
- information literacy
- media literacy
- information and communications technology (ICT)
- literacy
- flexibility and adaptability
- initiative and self direction
- social and cross cultural skills
- productivity and accountability
- leadership and responsibility

Interdependence of Science, Engineering, and Technology

- Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems. (MS-ESS1-3)

Unit Objectives:

Students will know...

- an object is in motion if it changes position relative to a reference point
- when you know both the speed and the direction of an object's motion, you know the velocity of the object
- acceleration is a change in velocity (increasing speed, decreasing speed, or a change in direction)

- a force is described by its strength and by the direction in which it acts.
- unbalanced forces acting on an object result in a net force and cause a change in the object's motion.
- balanced forces acting on an object do not change the object's motion.
- two factors affect the gravitational attraction between objects: mass and distance.
- an object at rest will remain at rest, and an object moving at a constant velocity will continue moving at a constant velocity, unless it is acted upon by an unbalanced force.
- acceleration depends on the object's mass and on the net force acting on the object.
- if one object exerts a force on another object, then the second object exerts a force of equal strength in the opposite direction on the first object.
- impact of collisions between two cars and between a car and stationary objects
- gravitational interactions are always attractive
- when two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object
- magnetic forces can be both attractive and negative
- objects can exert forces on each other even though the objects are not in contact, through fields
- magnetic force depends on the magnitude of the charges, or magnetic strength
- electric forces can be both attractive and negative
- objects can exert forces on each other even though the objects are not in contact, through fields
- strength of electric force depends on magnitude of the current
- An electric current produces a magnetic field
- A magnetic field produced by a current has 3 distinctive characteristics: field can be turned on or off, have its direction reversed or have its strength changed

Skills:

- apply Newton's Third Law of Motion to relate forces to explain the motion of two colliding objects
- apply ideas about gravitational, electrical, and magnetic forces to explain a variety of phenomena
- demonstrate proficiency in asking questions, planning and carrying out investigations, designing solutions, and engaging in arguments and to use these practices to demonstrate understanding of the core ideas
- describe ways that unbalanced forces cause changes in motion
- apply an engineering practice and concept to solve a problem caused when objects collide
- describe the difference between mass and weight
- investigate ideas that objects can exert forces on each other even though the objects are not in contact, through fields

Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources	
Savvas Realize Consumable Workbook and etext Link: Forces Online Textbook		
	Google Classroom	Learning management system
	Online Textbook	Savvas Realize Consumable workbook and etext
	Google Sites	Simple website design platform
	Google Slides	Presentation and design tool
	Google Meet	Video conferencing tool
	Google Forms	Quiz and survey tool
	Additional Online Resources/Tools	
	Seesaw	Learning management system
	EdPuzzle	Interactive video lessons
	Jamboard	Online, collaborative whiteboard
	Flipgrid	Video discussion tool
	Padlet	Online, collaborative discussion tool
	Quizlet	Digital flash card review
Quizizz	Student paced formative assessments	

Flippity	Google Sheet game tool
Achieve3000	Differentiated reading instruction
Vocabulary.com	Vocabulary assistance
ReadWorks	Teacher/student comprehension texts
YouTube	Media resources
Kahoot! Learning games Make learning awesome!	Interactive review game
Padlet	Live sharing
Lino - Sticky and Photo Sharing for you	Live sharing

Accommodations/Modifications
 (ELL, Students with IEPs, 504s, Gifted Learners, At Risk)
Each group must be listed separately

Assessment
(All forms must be identified)

- At Risk modifications:**
- Follow all IEP modifications/504 plan
 - Teacher tutoring
 - Peer tutoring
 - Cooperative learning groups
 - Modified assignments
 - Differentiated instruction
- Presentation accommodations allow a student to:**
- Listen to audio recordings instead of reading text
 - Learn content from audiobooks, movies, videos and digital media instead of reading print versions
 - Work with fewer items per page or line and/or materials in a larger print size
 - Have a designated reader
 - Hear instructions orally
 - Record a lesson, instead of taking notes

- Formative**
- Graphic Organizers & Guided Note Taking
 - Directed Reading
 - Cooperative Group Learning
 - Homework
 - Journal Entries
 - Exit Tickets
 - Polls/ Surveys with self evaluation component
 - Jigsaw
 - Think, Pair, Share
 - Quizzes
- **Summative**
 - Unit Tests
 - Chapter Tests
 - **Benchmark**
 - Quarterly Exam
 - **Alternative**
 - Labs

- Have another student share class notes with him
- Be given an outline of a lesson
- Use visual presentations of verbal material, such as word webs and visual organizers
- Be given a written list of instructions

Response accommodations allow a student to:

- Give responses in a form (oral or written) that's easier for him
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker
- Use a word processor to type notes or give responses in class
- Use a calculator or table of "math facts"

Setting accommodations allow a student to:

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher)
- Use special lighting or acoustics
- Take a test in small group setting
- Use sensory tools such as an exercise band that can be looped around a chair's legs (so fidgety kids can kick it and quietly get their energy out)

Timing accommodations allow a student to:

- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling accommodations allow a student to:

- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization skills accommodations allow a student to:

- Use an alarm to help with time management
- Mark texts with a highlighter
- Have help coordinating assignments in a book or planner

- Projects
- Portfolio Assessments
- RST - Research Simulation Task

- Receive study skills instruction

Assignment modifications allow a student to:

- Complete fewer or different homework problems than peers
- Write shorter papers
- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum modifications allow a student to:

- Learn different material (such as continuing to work on multiplication while classmates move on to fractions)
- Get graded or assessed using a different standard than the one for classmate

ELLs modifications

- Teacher tutoring
- Peer tutoring
- Cooperative learning groups
- Modified assignments
- Differentiated instruction

Presentation accommodations allow a student to:

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- Have a designated reader
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Gifted And Talented modifications

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use of technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Flexible seating
- Student choice in seating/grouping

Timing accommodations allow a student to:

- Flexible pacing in terms of content, assignments, and assessments
- Allow students to explore extended activities

Scheduling accommodations allow a student to

- Establishing a timeline from completing a project
- Rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Citing text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project, alternate labs,

Curriculum modifications allow a student to:

- Use topics of interest to the student, relevant to how the world works, complex and worthwhile
- Supplemental reading materials matched to individual student lexiles
- Provide opportunities for open-ended, self-directed activities
- Get graded or assessed using a different standard than the one for classmates

Overview

Energy Transfer

Unit Summary: Students understand qualitative ideas about energy including that the interactions of objects can be explained and predicted using the concept of transfer of energy from one object or system of objects to another, and that the total change of energy in any system is always equal

to the total energy transferred into or out of the system. Students also understand that when objects are moving they have kinetic energy and that objects may also contain stored (potential) energy, depending on their relative positions. Students know the difference between energy and temperature, and begin to develop an understanding of the relationship between force and energy. Students are also able to apply an understanding of design to the process of energy transfer. The crosscutting concepts of scale, proportion, and quantity; systems and system models; and energy are called out as organizing concepts for these disciplinary core ideas. Students demonstrate proficiency in developing and using models, planning investigations, analyzing and interpreting data, and designing solutions, and engaging in argument from evidence; and to use these practices to demonstrate understanding of the core ideas in Energy.

Enduring Understandings:

Students will understand that...

- interactions of object or system of objects to another and that the total change of energy in any system is always equal to the total energy transferred into or out of the system
- moving objects object have kinetic energy
- objects may also contain stored energy depending on their relative positions
- there is a difference between energy and temperature
- there is a relationship between force and energy
- energy takes many forms
- forms of energy can be grouped into types of energy that are associated with the motion of mass (kinetic energy), and types of energy associated with the position of mass and with energy fields (potential energy)
 - All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.
 - The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions.
 - There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.
 - There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.
 - Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors.
 - Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design.

- A solution needs to be tested, and then modified on the basis of the test results, in order to improve it.
- Models of all kinds are important for testing solutions.
- The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution

Essential Questions:

- How can energy be transferred from one object or system to another?
- How does energy cause change?
- What happens when heat flows from one object to another?

Standards

MS-PS3-1, MS-PS3-2, MS-PS3-3, MS-PS3-4, MS-PS3-5, MS-ESS2-1, MS-ETS1-1, MS-ETS1-2, MS-ETS1-3, MS-ETS1-4
[NJ Science Standards](#)

Interdisciplinary Connections
[Other Cross-Curricular Opportunities](#)
Opportunities for [SEL](#)

21st Century Life and Careers

- creativity and innovation
- critical thinking and problem solving
- communication
- collaboration
- information literacy
- media literacy
- information and communications technology (ICT)
- literacy
- flexibility and adaptability
- initiative and self direction
- social and cross cultural skills
- productivity and accountability
- leadership and responsibility

Technology

Interdependence of Science, Engineering, and Technology

- Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems. (MS-ESS1-3)

Unit Objectives:

Students will know...

- two basic kinds of energy are kinetic and potential
- describe relationship of KE to the mass of an object and to the speed of an object using graphs
- explain that as the distance (position) changes the potential energy stored changes
- most forms of energy can be transformed into other forms
- when two objects interact, each one exerts a force on the other than can cause energy to be transferred to or from the object
- temperature is a measure of the average KE of particles in matter
- the relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present

Skills:

Students will be able to...

- apply an understanding of design to the process of energy transfer
- develop and use models to demonstrate that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in a system
- plan an energy investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample
- analyze and interpret data from investigations
- design solutions to energy based problems
- engage in evidence based arguments
- demonstrate understanding of the core ideas related to energy

Student Learning		
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources	
Savvas Realize Consumable Workbook and etext Link: Energy Transfer Online Textbook Thermal Energy Online Textbook	Google Classroom	Learning management system
	Online Textbook	Savvas Realize Consumable workbook and etext
	Google Sites	Simple website

	design platform
Google Slides	Presentation and design tool
Google Meet	Video conferencing tool
Google Forms	Quiz and survey tool

Additional Online Resources/Tools	
Seesaw	Learning management system
EdPuzzle	Interactive video lessons
Jamboard	Online, collaborative whiteboard
Flipgrid	Video discussion tool
Padlet	Online, collaborative discussion tool
Quizlet	Digital flash card review
Quizizz	Student paced formative assessments
Flippity	Google Sheet game tool
Achieve3000	Differentiated reading instruction
Vocabulary.com	Vocabulary assistance
ReadWorks	Teacher/student comprehension texts
YouTube	Media resources

Kahoot! Learning games Make learning awesome!	Interactive review game
Padlet	Live sharing
Lino - Sticky and Photo Sharing for you	Live sharing

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Assessment
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- Modified assignments
- Differentiated instruction

Presentation accommodations allow a student to:

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- Record a lesson, instead of taking notes
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Formative

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- Answer fewer or different test questions
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Curriculum modifications allow a student to:

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- Rigorous Pacing

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Overview

Earth's Systems

Unit Summary:

What are the characteristic properties of waves and how can they be used?

Students examine geoscience data in order to understand the processes and events in Earth's history. Important concepts in this topic are "Scale, Proportion, and Quantity" and "Stability and Change," in relation to the different ways geologic processes operate over the long expanse of geologic time. An important aspect of the history of Earth is that geologic events and conditions have affected the evolution of life, but different life forms have also played important roles in altering Earth's systems. Students are expected to demonstrate proficiency in analyzing and interpreting data, and constructing explanations; and to use these practices to demonstrate understanding of the core ideas.

Enduring Understandings:

Students will understand that...

- geoscience data can be used to understand the processes and events in Earth's history
- geologic events and conditions have affected the progression of life
- different life forms have also played important roles in altering Earth's systems
- All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.
 - Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization and precipitation, as well as downhill flows on land
 - Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events.

Essential Questions:

- How do people figure out that the Earth and life on Earth have changed over time?
- How does the movement of tectonic plates impact the surface of Earth?

Standards

ESS1.C, MS-ESS1-4, MS-ESS2-1, MS-ESS2-2, MS-ESS2-3, MS-ESS2-4, MS-ESS3-2, ESS3.D
[NJ Science Standards](#)

Interdisciplinary Connections
[Other Cross-Curricular Opportunities](#)
Opportunities for [SEL](#)

21st Century Life and Careers

- creativity and innovation
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- collaboration
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- information and communications technology (ICT)
- literacy
- flexibility and adaptability
- initiative and self direction
- social and cross cultural skills
- productivity and accountability
- leadership and responsibility

Technology

Interdependence of Science, Engineering, and Technology

- Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems. (MS-ESS1-3)

Unit Objectives:

Students will know...

- tectonic processes continually generate new ocean sea floor at ridges and destroy old sea-floor at trenches
- maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart
- plate motion; introduce plate boundaries as mountain-, volcano-, trench-, or rift-forming, but do not assess boundary names (divergent, convergent, transform)
- understand layers of the Earth
- understand the forces that drive plate movement
- earthquakes are created by a slow build-up of energy that has been released
- earthquakes change the Earth's surface over time
- energy moves through the earth as waves
- volcanoes can form at hotspots or boundaries
- volcanic belts form along the boundaries of earth's plates

- geologists classify volcanic eruptions as quiet or explosive
- geologists often use the terms active, dormant, or extinct to describe a volcano's stage of activity
- volcanic eruptions create landforms; shield volcanoes, cinder cone volcanoes, composite volcanoes, and lava plateaus
- the fossil record provides evidence about the history of life and past environments on Earth
- the fossil record shows that organisms have changed over time
- most fossils form when living things die and are buried by sediments, sediments slowly harden into rock and preserve the shape of the organism
- the geologic time scale interpreted from rock strata provides a way to organize Earth's history
- analyses of rock strata and the fossil record provide only relative dates, not an absolute scale

Skills:

Students will be able to...

- identify the layers of the Earth by composition and physical properties
- explain how sea floor spreading provides a way for continents to move
- describe how new oceanic lithosphere forms at mid-ocean ridges
- describe the forces thought to move tectonic plates
- describe the stress that deforms rocks
- demonstrate proficiency in analyzing and interpreting data
- demonstrate proficiency in constructing explanations and to use these practices to demonstrate understanding core ideas.
- use relative dates provided by fossil record to make claims regarding the disappearance of organisms
- correlate the progression of organisms and the environmental conditions on Earth as they changed throughout geologic time
- analyze evidence of rock formations and the fossils they contain to establish relative ages of major events in Earth's history examples of Earth's major events could range from very recent (such as the last ice age or the earliest fossils) to very old
- explain how geologic time is recorded in rock layers
- explain how the geological column is used in relative dating
- construct an explanation based on evidence for how processes change Earth's surface at time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges) or small (such as rapid landslides or microscopic geochemical reactions) and how many geoscience processes (such as earthquakes, volcanoes, and meteor impacts) usually behave gradually but are punctuated by catastrophic events
- analyze and interpret data that include similarities of rock and fossil types on different continents, the shapes of the continents (including continental shelves), and the locations of ocean structures (such as ridges, fracture zones, and trenches)

Student Learning

Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources	
<p>Savvas Realize Consumable Workbook and eText Link:</p> <p>Introduction to Earth's Systems Online Textbook Minerals & Rocks in the Geosphere Online Textbook</p> <p>Plate Tectonics Online Textbook History of Earth Online Textbook</p>	Google Classroom	Learning management system
	Online Textbook	Savvas Realize Consumable workbook and eText
	Google Sites	Simple website design platform
	Google Slides	Presentation and design tool
	Google Meet	Video conferencing tool
	Google Forms	Quiz and survey tool
	Additional Online Resources/Tools	
	Seesaw	Learning management system
	EdPuzzle	Interactive video lessons
	Jamboard	Online, collaborative whiteboard
	Flipgrid	Video discussion tool

Padlet	Online, collaborative discussion tool
Quizlet	Digital flash card review
Quizizz	Student paced formative assessments
Flippity	Google Sheet game tool
Achieve3000	Differentiated reading instruction
Vocabulary.com	Vocabulary assistance
ReadWorks	Teacher/student comprehension texts
YouTube	Media resources
Kahoot! Learning games Make learning awesome!	Interactive review game
Padlet	Live sharing
Lino - Sticky and Photo Sharing for you	Live sharing

Accommodations/Modifications
 (ELL, Students with IEPs, 504s, Gifted Learners, At Risk)
Each group must be listed separately

Assessment
(All forms must be identified)

At Risk modifications:

- Follow all IEP modifications/504 plan
- Teacher tutoring
- Peer tutoring
- Cooperative learning groups
- Modified assignments
- Differentiated instruction

Formative

- Graphic Organizers & Guided Note Taking
- Directed Reading
- Cooperative Group Learning
- Homework
- Journal Entries
- Exit Tickets

Presentation accommodations allow a student to:

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- Have a designated reader
- Hear instructions orally
- Record a lesson, instead of taking notes
- Have another student share class notes with him
- Be given an outline of a lesson
- Use visual presentations of verbal material, such as word webs and visual organizers
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Timing accommodations allow a student to:

- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling accommodations allow a student to:

- Polls/ Surveys with self evaluation component
- Jigsaw
- Think, Pair, Share
- Quizzes
- **Summative**
 - Unit Tests
 - Chapter Tests
- **Benchmark**
 - Quarterly Exam
- **Alternative**
 - Labs
 - Projects
 - Portfolio Assessments
 - RST - Research Simulation Task

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- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization skills accommodations allow a student to:

- Use an alarm to help with time management
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- Have help coordinating assignments in a book or planner
- Receive study skills instruction

Assignment modifications allow a student to:

- Complete fewer or different homework problems than peers
- Write shorter papers
- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum modifications allow a student to:

- Learn different material (such as continuing to work on multiplication while classmates move on to fractions)
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Gifted And Talented modifications

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use of technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Flexible seating
- Student choice in seating/grouping

Timing accommodations allow a student to:

- Flexible pacing in terms of content, assignments, and assessments
- Allow students to explore extended activities

Scheduling accommodations allow a student to

- Establishing a timeline from completing a project
- Rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Citing text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project, alternate labs,

Curriculum modifications allow a student to:

- Use topics of interest to the student, relevant to how the world works, complex and worthwhile
- Supplemental reading materials matched to individual student lexiles
- Provide opportunities for open-ended, self-directed activities

- | | |
|---|--|
| <ul style="list-style-type: none">• Get graded or assessed using a different standard than the one for classmates | |
|---|--|

Overview

Changing Earth & Human Activity

Unit Summary: Students understand how Earth's geosystems operate by modeling the flow of energy and cycling of matter within and among different systems. Students investigate the controlling properties of important materials and construct explanations based on the analysis of real geoscience data. Of special importance in both topics are the ways that geoscience processes provide resources needed by society but also cause natural hazards that present risks to society; both involve technological challenges, for the identification and development of resources and for the mitigation of hazards. The crosscutting concepts of cause and effect, energy and matter, and stability and change are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate proficiency in developing and using models and constructing explanations; and to use these practices to demonstrate understanding of the core ideas.

Enduring Understandings:

Students will understand that...

- Earth is constantly changing due to natural cycles
- geoscience provide resources needed by society but also cause natural hazards that present risks to society
- technology enables us to better understand Earth's systems and the impact of Earth's systems on human activity

- the flow of energy from the cycling of matter within and among different systems
- Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things.
 - Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities
 - The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions.
 - There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.
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 - Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors.
 - Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design.
 - A solution needs to be tested, and then modified on the basis of the test results, in order to improve it.
 - Models of all kinds are important for testing solutions.
 - The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution.

Essential Questions:

- How do the materials in and on Earth's crust change over time?
- How does water influence and shape Earth's surface?

Standards

ESS2.A, MS-ESS2-1, ESS2.C, MS-ESS3-1, MS-ESS3.3, MS-ESS3.D, MS-ESS3.4, MS-ESS3-5,

MS-ETS1-1, MS-ETS1-2, MS-ETS1-3, MS-ETS1-4
[NJ Science Standards](#)

Interdisciplinary Connections
[Other Cross-Curricular Opportunities](#)
Opportunities for [SEL](#)

21st Century Life and Careers

- creativity and innovation
- critical thinking and problem solving
- communication
- collaboration
- information literacy
- media literacy
- information and communications technology (ICT)
- literacy
- flexibility and adaptability
- initiative and self direction
- social and cross cultural skills
- productivity and accountability
- leadership and responsibility

Technology

Interdependence of Science, Engineering, and Technology

- Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems. (MS-ESS1-3)

Unit Objectives:

Students will know...

- all Earth processes are the result of energy flowing and matter cycling within and among the planet's system
- rocks are continually cycling from one kind to another due to earth's processes
- metamorphic rocks form from the deformation of Earth's heat and pressure
- igneous rock forms from melting, cooling, and crystallization
- sedimentary rock forms from weathering, erosion, deposition, compaction, and cementation
- soil is a natural uneven distribution of resources as a result of past processes
- soil is one of Earth's most valuable natural resources because everything that lives on land, including humans, depends directly or indirectly on soil
- soil comes from weathered rock fragments, minerals and decaying organic material
- soil is found in layers, each having a different chemical composition and texture
- water's movements both on the land and underground cause weathering and erosion, which change the land's surface features and create underground formations
- global movements of water and its changes in form are propelled by sunlight and gravity
- weathering, erosion and deposition act together in a cycle that wears down and builds up Earth's surface

- most sediment washed or falls into a river as a result of mass movement or run-off
- when a glacier melts it deposits the sediment it erodes from the land creating various landforms
- waves shape the coast through erosion by breaking down rock and transporting sand and other sediments
- wind erosion and deposition may form sand dunes
- water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization and precipitation as well as downhill flows on land
- global movements of water and its changes in form are propelled by sunlight and gravity

Skills:

Students will be able to...

- demonstrate proficiency in developing and using models and constructing explanations
- develop a conceptual model the rock cycle and how it relates to the change of Earth's surface over time
 - develop a conceptual model the water cycle and how it relates to the change of earth's surface over time
 - investigate weathering and erosion as processes that break down and build up Earth's surface
 - construct explanations based on real geoscience data
 - explain how weathering changes the Earth's surface over time by breaking rock into smaller pieces
- explain that erosion is the wearing away of the Earth's surface by water, wind, ice and gravity
- debate ways that natural resources (water, soil, rocks, etc) are needed and used by society

Student Learning

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	Online Textbook	Savvas Realize Consumable workbook and etext
	Google Sites	Simple website design platform
	Google Slides	Presentation and design tool

Google Meet	Video conferencing tool
Google Forms	Quiz and survey tool

Additional Online Resources/Tools	
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Seesaw	Learning management system
EdPuzzle	Interactive video lessons
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Flipgrid	Video discussion tool
Padlet	Online, collaborative discussion tool
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